

WHAT IS CLAIMED IS:

1. A pesticidal composition comprising, in admixture with an acceptable carrier, at least one plant essential oil compound or derivative thereof and an enzyme inhibitor.

5 2. The pesticidal composition of claim 1, wherein the enzyme inhibitor is a Phase I and/or Phase II drug metabolizing enzyme inhibitor.

3. The pesticidal composition of claim 1, wherein the plant essential oil or derivative thereof, comprises a monocyclic, carbocyclic ring structure having six-members and substituted by at least one oxygenated or hydroxyl functional moiety.

10 4. The pesticidal composition of claim 1, wherein the enzyme inhibitor is selected from the group consisting of piperonyl butoxide, MGK 264, and sesamex.

5. The pesticidal composition of claim 1 wherein the plant essential oil compounds or derivatives thereof are selected from the group consisting of aldehyde C16 (pure), α -terpineol, amyl cinnamic aldehyde, amyl salicylate, anisic aldehyde, benzyl alcohol, benzyl acetate, 15 cinnamaldehyde, cinnamic alcohol, carvacrol, carveol, citral, citronellal, citronellol, p-cymene, diethyl phthalate, dimethyl salicylate, dipropylene glycol, eucalyptol (cineole) eugenol, iso-eugenol, galaxolide, geraniol, guaiacol, ionone, menthol, methyl anthranilate, methyl ionone, methyl salicylate, α -phellandrene, pennyroyal oil perillaldehyde, 1- or 2-phenyl ethyl alcohol, 1- or 2-phenyl ethyl propionate, piperonal, piperonyl acetate, 20 piperonyl alcohol, D-pulegone, terpinen-4-ol, terpinyl acetate, 4-tert butylcyclohexyl acetate, thyme oil, thymol, metabolites of trans-anethole, vanillin, and ethyl vanillin.

6. A method for controlling pests, which comprises applying to the locus where control is desired a pesticidally-effective amount of the composition of claim 1.

7. A pesticidal composition comprising, in admixture with an acceptable carrier, at least one plant essential oil or derivative thereof and an enzyme inhibitor, and at least one 25 synergist.

8. The pesticidal composition of claim 7, wherein the enzyme inhibitor is a Phase I and/or Phase II drug metabolizing enzyme inhibitor.

9. The pesticidal composition of claim 7, wherein the plant essential oil or derivative thereof, comprises a monocyclic, carbocyclic ring structure having six-members and substituted by at least one oxygenated or hydroxyl functional moiety.

10. The pesticidal composition of claim 7, wherein the enzyme inhibitor is selected from the group consisting of piperonyl butoxide, MGK 264, and sesamex.

11. The pesticidal composition of claim 7, wherein the plant essential oil compounds or derivatives thereof are selected from the group consisting of aldehyde C16 (pure), α -terpineol, amyl cinnamic aldehyde, amyl salicylate, anisic aldehyde, benzyl alcohol, benzyl acetate, cinnamaldehyde, cinnamic alcohol, carvacrol, carveol, citral, citronellal, citronellol, p-cymene, diethyl phthalate, dimethyl salicylate, dipropylene glycol, eucalyptol (cineole) eugenol, isoeugenol, galaxolide, geraniol, guaiacol, ionone, menthol, methyl anthranilate, methyl ionone, methyl salicylate, α -phellandrene, pennyroyal oil perillaldehyde, 1- or 2-phenyl ethyl alcohol, 1- or 2-phenyl ethyl propionate, piperonal, piperonyl acetate, piperonyl alcohol, D-pulegone, terpinen-4-ol, terpinyl acetate, 4-tert butylcyclohexyl acetate, thyme oil, thymol, metabolites of trans-anethole, vanillin, and ethyl vanillin.

12. The pesticidal composition of claim 7, wherein the synergist is a member selected from the group consisting of pyrethrolone, allethrolone, chrysanthemic acid, chrysanthemyl alcohol, chrysanthemate ester, cis-jasmone, tetrahydrofurfuryl alcohol (THFA), forskolin, Lavandustin A, and PD 98059 (flavone).

13. A method for controlling pests, which comprises applying to the locus where control is desired a pesticidally-effective amount of the composition of claim 7.

14. A pesticidal composition comprising, in admixture with an acceptable carrier, an enzyme inhibitor and at least one synergist.

15. The pesticidal composition of claim 14, wherein the enzyme inhibitor is selected from the group consisting of piperonyl butoxide, MGK 264, and sesamex.

16. The pesticidal composition of claim 14, wherein the synergist is a member selected from the group consisting of pyrethrolone, allethrolone, chrysanthemic acid, chrysanthemyl alcohol, chrysanthemate ester, cis-jasmone, tetrahydrofurfuryl alcohol (THFA), forskolin, Lavandustin A, and PD 98059 (flavone).

17. A method for controlling pests, which comprises applying to the locus where control is desired a pesticidally-effective amount of the composition of claim 14.